Figure 13D as well as pages 26, line 15 through page 29, line 13 which provides support for the claims. It is respectfully submitted that the claims contain subject matter which is described in the specification in such a way as to reasonably convey to one in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. It is therefore respectfully requested that the Examiner withdraws the rejection to claims 7-8 and 22-23 under 35 U.S.C. § 112, first paragraph.

Claim 1 claims a photomask and claim 16 claims a photomask fabrication method including a transparent substrate, a hollow section formed on the surface of the transparent substrate, a shade pattern formed in the hollow section and reflection preventing sections or films.

Through the structure and method of the claimed invention having reflection preventing sections or films, as claimed in claims 1 and 16, the claimed invention provides a photomask and method of making thereof which has a large mechanical strength and has decreased structural defects in the shade pattern. The prior art does not show, teach or suggest a photomask and method thereof having reflection preventing sections or films as claimed in claims 1 and 16.

Claim 2 claims a photomask and claim 17 claims a photomask fabrication method in which a) a shade pattern is formed on a surface of a transparent substrate and b) a phase shift pattern, a surface of which is planarized by chemical and mechanical polishing, is selectively formed on the shade pattern and the transparent substrate.

Through the structure and method of the claimed invention forming a shade pattern on the surface of a transparent substrate and forming a planarized phase shift pattern by

chemical and mechanical polishing, as claimed in claims 2 and 17, the claimed invention provides a photomask and fabrication method thereof in which a phase shift pattern has a uniform thickness so that the contrast of an optical image is increased. The prior art does not show, teach or suggest a shade pattern formed on a surface of a transparent substrate or a phase shift pattern planarized by chemical and mechanical polishing as claimed in claims 2 and 17.

Claim 5 claims a photomask and claim 20 claims a photomask fabrication method in which a shade pattern is formed in a hollow section of a transparent substrate and a phase shift pattern, which is planarized, is selectively formed on the transparent substrate and part of the shade pattern.

Thus, the claimed invention provides a photomask and a fabrication method thereof in which it is possible to increase the contrast of an optical image when semiconductor integrated circuits are fabricated using the phase shift photomask. The prior art does not show, teach or suggest the invention as claimed in claims 5 and 20.

Claim 7 claims a photomask and claim 22 claims a photomask fabrication method in which a phase shift pattern is formed in a transparent substrate.

Thus, the claimed invention provides a photomask and fabrication method thereof in which it is possible to increase the contrast of an optical image when the photomask is used. The prior art does not show, teach or suggest forming a phase shift pattern in the substrate itself as claimed in claims 7 and 22.

Claims 13 and 15 claim a photomask comprising a transparent substrate, and a half-tone phase shift pattern or an intermediate type phase shift pattern which is selectively formed on the transparent substrate. A surface of the phase shift pattern is flat.

Through the structure of the claimed invention having a half-tone phase shift pattern or an intermediate type phase shift pattern selectively formed on a transparent substrate and having a flat surface, as claimed in claims 13 and 15, the claimed invention provides a photomask in which there is no mechanical stress that occurs during the washing process which increases the yield. The prior art does not show, teach or suggest the invention as claimed in claims 13 and 15.

Claim 28 claims a photomask comprising a transparent substrate, a hollow section and a shade pattern including a shade section formed in the hollow section. The surface of the transparent substrate and the shade pattern are planarized to form a same surface.

Through the structure of the claimed invention planarizing a transparent substrate and shade pattern to form a same surface, as claimed in claim 28, the claimed invention provides a photomask in which there is no mechanical stress that occurs during the washing process which increases the yield. The prior art does not show, teach or suggest the invention as claimed in claim 28.

Applicant respectfully points out that phase-shifting methods can be largely classified as 1) Spacial Frequency Modulation type, 2) Diffraction Amplitude Modulation type, and 3) Edge Enhance type. These three types can be further classified as follows:

1) Spacial Frequency Modulation type

a) Levenson type (= Alternate type)

b) Phase Edge type

c) Multi Step type

2) Diffraction Amplitude Modulation type

a) Half Tone type (= Attenuated type)

b) Double Layer Half Tone type

c) Shifter Shade type

d) Shifter Shade with Cr type

3) Edge Enhance type

a) Auxiliary Shifter type (= Outrigger type)

b) Self Align type (= Rim type)

As mentioned above, the concept of phase-shifting methods is broad, and includes many types of phase-shifting methods. The Edge Enhance type include Auxiliary Shifter type and Rim type, but it does not include Levenson type and Shifter Shade type. In *Hur et al.* and *Lee* references cited by the Examiner the Rim type in the Edge Enhance type is described among these, several phase-shifting methods. The Examiner states the following: "An edge enhancement (Edge Enhance type) phase shift mask with auxiliary shifters is a Levenson mask (Levenson type), and includes a phase shift pattern of a shifter shading type with a shade pattern." and "The phase shift mask of *Lee* '439 is a Levenson phase shift mask with auxiliary shifters and enhances the phase shifting effect at the edge portion. The mask also includes a phase shift pattern of a shifter shade type with a shade pattern." Such an interpretation cannot be understood by specialists in the technical field.

Applicant respectfully requests the Examiner state any reasons why the Edge Enhance type can become the Levenson type or Shifter Shade type.

The following references (see attached) are referred as an evidence for a variety of phase-shifting masks.

1. Maaike Op de Beeck et al., "Improvement of Focus and Exposure Latitude by the Use of Phase-Shifting Masks for D.U.V. Applications", Proc. SPIE Vol. 1463 Optical/Laser Microlithography IV (1991) 180-196

2. NIKKEI MICRODEVICES 1990 July pp. 108-114

3. Maaike Op de Beeck et al., "Influence of Shifter Errors on the Printability of L/S Structures Using the Alternated Phase-Shifting Design: Simulations and Experiments", J. Vac. Sci. Technol. B (10)6, Nov/Dec. 1992, pp 2468-2479

In the technical field, as is represented by Maaike Op de Beeck et al. Proc. SPIE Vol. 1463 Optical/Laser Microlithography IV (1991) 180-196, there have been many arguments as to the characteristics of a variety of phase-shifting methods, usages corresponding to merits or demerits, and the like. In addition, another reference (NIKKEI MICRODEVICES 1990 July pp. 108-114) describes the classification of phase-shifting methods by Japanese. It is well known that Levenson type and Shifter Shade type are quite contrary to each other in image principle and cannot coexist. Further, Levenson type and Shifter Shade type are suitable for close patterns, while Edge Enhance type and Shifter Shade type are suitable for isolated patterns. The requirements of the above usages means that a variety of phase-shifting masks should not be confused.

Claims 7, 22, 23 and 28 were rejected under 35 U.S.C. §102(b) as being anticipated by *Hur et al* (U.S. Patent No. 5,437,947).

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. §102(b). The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, it is respectfully requested that the Examiner withdraws the rejection to the claims and allows the claims to issue.

Applicant respectfully traverses the Examiner's statement that *Hur et al.* teaches etching the substrate to form a pattern and thus must perform the phase shift to work correctly. *Hur et al.* clearly discloses that the phase shift pattern 28 is formed on top of a substrate by layer 28 or by oxide layer 26. Nothing in *Hur et al.* shows, teaches or suggests forming the phase shift pattern **in** a transparent substrate as claimed in claims 7 and 22.

Additionally, Applicant respectfully traverses the Examiner's statement that claim 28 does not preclude phase shifting features. Applicant respectfully points out that *Hur et al.* does not show, teach or suggest a photomask in which a transparent substrate and shade pattern are planarized to have a same surface.

Applicant additionally traverses the Examiner's statement that *Hur et al.* inherently has a planarized layer since the layer is flat. *Hur et al.* is merely discloses a graphic representation in the figures. Nowhere in the reference is it stated that there is any planarization. Furthermore, nothing in *Hur et al.* shows, teaches or suggests planarizing a transparent substrate and shade pattern to form a same surface as claimed in claim 28.

The Examiner states: "It is inherent that the phase-shifting layer is flat, as the layer is flat." The phase-shifting layer is ideally flat. However, when it is fabricated practically, the layer is not always finished in a flat manner due to many variation factors. For example, in Maaike Op de Beeck et al. Proc. SPIE Vol. 1463 Optical/Laser Microlithography IV (1991) 180-196, Fig. 1 illustrates an appearance of variations in shifter thickness. Thus, the phase-shifting layer is not flat inherently. As in the present invention, it is not until a phase-shifting film subjected to a specific process such as CMP process that the film is flattened.

Hur et al. discloses in FIGs. 9A-9F an oxide layer 26, which is formed **on** the entire surface of the substrate 21, formed into a phase shifting layer 28. Thus, nothing in *Hur et al.* shows, teaches or suggests a phase shift pattern formed **in** the transparent substrate as claimed in claims 7 and 22 or that the phase shift pattern is formed by another hollow section as claimed in claim 7. Rather, in *Hur et al.* the oxide layer, which is formed into the phase shift pattern 28, is formed on top of the transparent substrate.

Additionally, since *Hur et al.* discloses in Figs. 9A-9F that the phase shift pattern 28 is formed by first depositing an oxide and then a resist layer 27, nothing in *Hur et al.* shows, teaches or suggests that after a shade pattern is formed, selectively etching the transparent substrate to form the phase shift pattern as claimed in claim 22. Rather, *Hur et al.* merely discloses that only the oxide layer, which is formed on the substrate 21, is etched into the phase shift pattern 28.

Similarly, FIG. 5 of *Hur et al.* merely discloses forming the phase shift layer 28 on top of the transparent substrate 21 and then forming a groove in both sides of a trench 23.

Thus, nothing in *Hur et al.* shows, teaches or suggests that the phase shift pattern is formed in the transparent substrate as claimed in claim 7. Rather, the phase shift layer 28 of *Hur et al.* is formed on top of the substrate, while the groove is used to maximize light sensitivity.

Furthermore, in FIG. 5 of *Hur et al.*, the opaque layer 25 is never chemically and mechanically polished to form a shade pattern as claimed in claim 22. Similarly, the transparent substrate in Fig. 5 of *Hur et al* is not etched to form the phase shift pattern but the phase shift pattern is formed by the oxide layer 26. Thus, nothing in *Hur et al.* shows, teaches or suggests the invention as claimed in claim 22.

Hur et al. discloses that a light-shading film and a transparent film to be placed under a phase-shifting film are planarized by CMP process, and then the phase-shifting film is formed on top in mask fabrications. In case of this method, since the end portion of close patterns is not sloped, there is no mechanical durability in the end portion. After the mask passes through a washing process, pattern defects may occur in the end portion. On the other hand, the present application describes mainly a technique to planarize the surface of a phase-shifting film by CMP process. According to this technique, the end portion of the close patterns is sloped in a specific manner, a mechanical durability can be ensured in the end portion. Thus, when the mask passes through the washing process, the pattern defects do not occur from the end portion. As described above, it is important to polish the surface of the phase-shifting mask by CMP process. It is impossible to derive this viewpoint from the conventional examples and a combination thereof.

Finally, *Hur et al.* is merely directed to forming a phase shifting mask. Nothing in *Hur et al.* shows, teaches or suggests a) a photomask (without a phase shifting layer) and b) a transparent substrate and shade pattern are planarized to have a same surface as claimed in claim 28.

Since nothing in *Hur et al.* shows, teaches or suggests the invention as claimed in claims 7, 22 and 28 as discussed above, it is respectfully requested that the Examiner withdraws the rejection to claims 7, 22 and 28 under 35 U.S.C. §102(b).

Claim 23 depends from claim 22 and recites additional features. It is respectfully submitted that claim 23 would not have been anticipated by *Hur et al.* within the meaning of 35 U.S.C. §102(b) at least for the reasons as set forth above. Therefore, it is respectfully requested that the Examiner withdraws the rejection to claim 23 under 35 U.S.C. §102(b).

Claims 2, 5, 7, 9-11, 14, 15, 17-23 and 28 were rejected under 35 U.S.C. §102(e) as being anticipated by *Lee* (U.S. Patent No. 5,824,439).

Applicant respectfully traverses the Examiner's rejections of claims under 35 U.S.C. § 102(e). The claims have been reviewed in light of the Office Action and for reasons which are set forth below, it is respectfully requested that the Examiner withdraws the rejection to the claims and allows the claims to issue.

Applicant respectfully traverses the Examiner's statement that *Lee* teaches etching the substrate to form a phase shift pattern. Clearly *Lee* '439 merely discloses forming a shading layer 39 within a groove 37 where the shading layer 39 is not part of the phase shift pattern 41. Thus nothing in *Lee* '439 shows a phase shift pattern formed **in** the

transparent substrate as claimed in claims 7 and 22. Rather the etching in *Lee* '439 is merely to form a groove for the shading layer 39.

Applicant furthermore traverses the Examiner's statement that claim 28 does not preclude a phase shifting feature. Applicant respectfully submits that nowhere does *Lee* show, teach or suggest using the photomask without the phase shifting layer 41.

Applicant furthermore respectfully traverses the Examiner's statement that the groove or trench has edges which are the surfaces of the substrate and therefore the shading film is formed on the surfaces of the substrate. Applicant respectfully points out that the Examiner's not using the word "on" in a conventional manner. Furthermore, *Lee* clearly teaches filling a groove (see column 5, line 33). This clearly would mean that the light shading layer may be equal to the same level as the surface of the substrate but it is not formed on (i.e., on top of) a surface of a substrate as claimed in claims 2 and 17.

Applicant also respectfully traverses the Examiner's statement that because the phase shift pattern is formed directly on the shade pattern, the phase shift pattern is part of the shade pattern. Applicant believes the Examiner is misinterpreting the claim. Applicant respectfully points out that the phase shift pattern is selectively formed on part of the shade pattern as claimed in claims 5 and 20. *Lee* '439 clearly teaches forming the phase shift layer 41 completely over the light shading layer 39 and not selectively formed on part of the shade pattern as claimed in claims 5 and 20.

Also, Applicant respectfully traverses the Examiner's statement that the layers are inherently planarized because they are shown as flat. *Lee* merely discloses planarizing a layer prior to implanting oxygen ions or heating to oxidize to form the phase shift layer.

Thus the phase shift layer 41 of *Lee* is never planarized after it is formed but a layer prior to its formation is planarized.

The Examiner states: "It is inherent that the phase-shifting layer is flat, as the layer is flat." The phase-shifting layer is ideally flat. However, when it is fabricated practically, the layer is not always finished in a flat manner due to many variation factors. For example, in Maaike Op de Beeck et al. Proc. SPIE Vol. 1463 Optical/Laser Microlithography IV (1991) 180-196, Fig. 1 illustrates an appearance of variations in shifter thickness. Thus, the phase-shifting layer is not flat inherently. As in the present invention, it is not until a phase-shifting film subjected to a specific process such as CMP process that the film is flattened.

Lee merely discloses a light-shading layer 39 formed within a groove 37. Nothing in *Lee* shows, teaches or suggests a shade pattern formed **on** a surface of the transparent substrate as claimed in claims 2 and 17. Rather, *Lee* teaches away from the claimed invention and forms the shading layer 39 within a groove 37.

Furthermore, *Lee* merely discloses polishing a zinc or polycrystalline silicon on the sacrificial layer to expose the sacrificial layer. Nothing in *Lee* shows, teaches or suggest performing a chemical and mechanical polishing for a surface of a phase shift pattern to form a desired thickness as claimed in claim 17 or planarizing a surface of a phase shift pattern as claimed in claim 2. *Lee* merely discloses exposing a sacrificial layer.

Additionally, *Lee* discloses that the phase shifting layer 41 is formed so as to be in contact with the transparent substrate 31 at both sides of the groove 37. Thus, nothing in *Lee* shows, teaches or suggests a phase shift pattern, which is planarized, selectively

formed on the transparent substrate and selectively formed on part of the shade pattern as claimed in claim 5. Rather, *Lee* teaches away from the claimed invention and forms the phase shifting layer 41 completely over the light-shading layer 39.

Additionally, since the phase shifting layer 41 is formed on top of the substrate 31, nothing in *Lee* shows, teaches or suggests that the phase shift pattern is formed in the transparent substrate as claimed in claim 7 or that the transparent substrate is selectively etched to form the phase shift pattern therein as claimed in claim 22. Rather, *Lee* teaches away from the claimed invention since the phase shifting layer 41 is formed on top of the substrate 31 and not in the substrate.

Furthermore, *Lee* clearly discloses filling the groove with zinc or a polycrystalline silicon and then polishing the zinc or polycrystalline silicon and the sacrificial layer and the transparent substrate to expose the sacrificial layer 33 and planarize. Thus, nothing in *Lee* shows, teaches or suggests that the resist film is eliminated from the transparent substrate prior to forming the shade film in the hollow sections or a planarized phase shift pattern as claimed in claim 20. Rather, *Lee* teaches away from the claimed invention and forms the zinc or polycrystalline silicon over the sacrificial layer 33.

Also, *Lee* merely discloses a method of manufacturing a phase shifting mask and the phase shifting mask. Thus, nothing in *Lee* shows, teaches or suggests a photomask (without a phase shifting layer) as claimed in claim 28.

Furthermore, *Lee* merely discloses that a zinc or polycrystalline silicon layer is planarized, then ion implanted and heat treated to form the phase shifting layer 41. Thus, no phase shift film is formed and then selectively etched to form a planarized phase shift

pattern as claimed in claim 20. Rather, a layer is formed which will become a light-shading layer or a phase shifting layer depending upon whether ion atoms can be properly implanted and heat treated in *Lee*. Thus, the planarization in *Lee* takes place prior to forming the phase shifting film and is not done by etching as claimed in claim 20.

Lee discloses that a light-shading film and a transparent film to be placed under a phase-shifting film are planarized by CMP process, and then the phase-shifting film is formed on top in mask fabrications. In case of this method, since the end portion of close patterns is not sloped, there is no mechanical durability in the end portion. After the mask passes through a washing process, pattern defects may occur in the end portion. On the other hand, the present application describes mainly a technique to planarize the surface of a phase-shifting film by CMP process. According to this technique, the end portion of the close patterns is sloped in a specific manner, a mechanical durability can be ensured in the end portion. Thus, when the mask passes through the washing process, the pattern defects do not occur from the end portion. As described above, it is important to polish the surface of the phase-shifting mask by CMP process. It is impossible to derive this viewpoint from the conventional examples and a combination thereof.

The Examiner combines a method of heating *Lee* (U.S. Patent 5,972,540) masks as a method of sloping phase shifters. But, in this method, even portions where sloping is unnecessary may be sloped. This results in enhancing a side effect such as degradation of image characteristics. This method cannot achieve the following in accordance with the present application: "Only the end portion of the shifters is selectively sloped; and the surface of the shifters is planarized in a pattern-congestion section." Thus, the same

resultant cannot be obtained from the conventional examples and a combination thereof, and there is an improved effect which is never obtained therefrom.

Finally, *Lee* merely discloses polishing a zinc or polycrystalline silicon on a sacrificial layer to expose the sacrificial layer. Nothing in *Lee* shows, teaches or suggests a surface of a phase shift pattern which is an intermediate type of phase shift pattern and selectively formed of the transparent substrate, is flat as claimed in claim 15. Rather *Lee* merely discloses polishing a zinc or polycrystalline silicon, which is formed on a sacrificial layer, to expose the sacrificial layer.

Since nothing in *Lee* shows, teaches or suggests the invention as claimed in claims 2, 5, 7, 15, 17, 20, 22 and 28 as discussed above, it is respectfully requested that the Examiner withdraws the rejection to claims 2, 5, 7, 15, 17, 20, 22 and 28 under 35 U.S.C. §102(e).

Claims 9-11, 14, 18-19, 21 and 23 depend from claims 2, 17, 20 and 22 and recite additional features. It is respectfully submitted that the claims would not have been anticipated by *Lee* within the meaning of 35 U.S.C. §102(e) at least for the reasons as set forth above. Therefore, it is respectfully requested that the Examiner withdraws the rejection to claims 9-11, 14, 18-19, 21 and 23 under 35 U.S.C. §102(e).

Claims 2, 5, 9-11, 14, 15 and 17-21 were rejected under 35 U.S.C. §103 as being unpatentable over *Hur et al.* in view of *Lee '439*.

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for

reasons which will be set forth below, it is respectfully requested that the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, nothing in *Hur et al.* or *Lee* shows, teaches or suggests a shade pattern formed on a surface of a transparent substrate as claimed in claims 2 and 17. *Hur et al.* clearly discloses that the opaque layer 25 is formed in a trench and thus is not formed on the surface of the substrate. Similarly, the light shading layer 39 in *Lee* is formed inside the groove 37. Thus, nothing in *Hur et al.* or *Lee* shows, teaches or suggests a shade pattern formed on the surface of a transparent substrate as claimed in claims 2 and 17. Furthermore, nothing in *Hur et al.* or *Lee* shows, teaches or suggests performing a chemical and mechanical polishing for a surface of a phase shift pattern to a desired thickness as claimed in claim 17 or planarizing a surface of a phase shift pattern as claimed in claim 2.

Additionally, *Hur et al.* discloses in FIG. 9F that the phase shift pattern is formed completely over the opaque layer 25 while in FIGs. 5 the phase shift pattern 28 is formed only over the substrate 21. Thus, nothing in *Hur et al.* shows, teaches or suggests a phase shift pattern, which is planarized, formed on the transparent substrate and part of the shade pattern as claimed in claim 5. Similarly, FIGs. 4 of *Lee* also disclose that the phase shift pattern is formed to cover the light shading layer 39 in the groove 37. Thus, nothing in *Lee* shows, teaches or suggests the phase shift pattern, which is planarized, formed on the substrate and part of the shade pattern as claimed in claim 5.

Also, *Hur et al* merely discloses in FIG. 9 that an oxide layer 26 is patterned by a photoresist film 27. Thus, nothing in *Hur et al* shows, teaches or suggests forming a

planarized phase shift pattern as claimed in claim 20. Furthermore, *Lee* merely discloses that a zinc or polycrystalline silicon layer is planarized, then ion implanted and heat treated to form the phase shifting layer 41. Thus, no phase shift film is formed which is then selectively etched to form a planarized phase shift pattern as claimed in claim 20. Rather, a layer is formed which will become a light-shading layer or a phase shifting layer depending upon whether ion atoms can be properly implanted and heat treated in *Lee*. Thus, the planarization in *Lee* takes place prior to forming the phase shifting film and is not done by etching as claimed in claim 20.

Further, a combination of a multiple-step shifter shown in *Lee* (U.S. Patent 6,017,659) and *Hur* (U.S. Patent 5,437,947) or *Lee* (U.S. Patent 5,824,439) results in increasing normal processes of mask fabrications by several times. The method stated by the Examiner requires 20 processes (5 process x 4 steps = 20 processes), while the present invention requires only six processes, thereby performing an efficiency of three times of more as compared to the combination designated by the Examiner.

Finally, as discussed above, nothing in *Hur et al.* or *Lee* shows, teaches or suggests forming an intermediate type phase shift pattern selectively on a transparent substrate where a surface of the phase shift pattern is flat as claimed in claim 15.

Since nothing in the combination of *Hur et al* and *Lee* shows, teaches or suggests the invention as claimed in claims 2, 5, 15, 17 and 20 as discussed above, it is respectfully requested that the Examiner withdraws the rejection to claims 2, 5, 15, 17 and 20 under 35 U.S.C. §103.

Claims 9-11, 14, 18-19 and 21 depend from claims 2, 17 and 20 and recite additional features. It is respectfully submitted that claims 9-11, 14, 18-19 and 21 would not have been obvious within the meaning of 35 U.S.C. §103 over *Hur et al.* and *Lee* at least for the reasons as set forth above. Therefore, it is respectfully requested that the Examiner withdraws the rejection to claims 9-11, 14, 18-19 and 21 under 35 U.S.C. §103.

Claim 1 was rejected under 35 U.S.C. §103 as being unpatentable over *Hur et al.* or *Lee '439* in view of *Tanabe* (U.S. Patent No. 5,945,237).

In addition, claims 16 and 24 were rejected under 35 U.S.C. §103 as being unpatentable over *Hur et al* or *Lee '439* in view of *Tanabe* and further in view of *Mitsui* (U.S. Patent No. 6,037,083).

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, it is respectfully requested that the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, both *Hur et al* and *Lee* are directed to a phase shifting mask and method of manufacturing thereof. Thus, nothing in *Hur et al* or *Lee* shows, teaches or suggests a photomask (without a phase shifter) as claimed in claims 1 and 16. Furthermore, neither *Hur et al* nor *Lee* shows, teaches or suggests reflection preventing sections as claimed in claims 1 and 16.

Tanabe appears to disclose in a half-tone phase-shift mask, a phase-inverting light transmission part is formed inside the light-blocking part which blocks light that is radiated onto a transparent substrate so as to cover a shifter missing part defect, this phase-inverting

light transmission part inverting the phase of light that passes through it with respect to light that passes through a light transmission part.

Thus, *Tanabe* similarly discloses a phase-shift mask. Nothing in *Tanabe* shows, teaches or suggests a photomask (without a phase shifter) as claimed in claims 1 and 16.

Additionally, *Tanabe* merely discloses a single or multi-layer film made of chrome oxide. However, nothing in *Tanabe* shows, teaches or suggests that a reflection preventing film formed on a shade section, a reflection preventing film formed under a shade section or a reflection preventing film formed on and under a shade section as claimed in claim 1 and claim 16.

Mitsui appears to disclose acid-resistant, highly reliable phase shift masks, and phase shift mask blanks, wherewith high-precision patterning is possible. A half-tone phase shift mask blank comprising a transparent substrate 10, a half-tone material film 11 laminated on that transparent substrate, and a metal film 12 laminated on that half-tone material film, wherein the metal film is formed by a plurality of metal films having different etching rates, and the etching rate for the metal film positioned on the transparent substrate side is set so that it is faster, either in stages or continuously, than the etching rate of the metal film positioned on the surface side.

Thus, *Mitsui* similarly discloses a phase shift mask and does not show, teach or suggest a photomask (without a phase shifter) as claimed in claims 1 and 16.

Furthermore, *Mitsui* merely discloses a metal film formed of a plurality of layers. Thus, nothing in *Mitsui* shows, teaches or suggests a reflection preventing section formed on and under a shade section as claimed in claim 16.

Since nothing in *Hur et al.*, *Lee*, *Tanabe* or *Mitsui* shows, teaches or suggests a photomask (without a phase shifter) or the reflection preventing section placement as claimed in claims 1 and 16, it is respectfully requested that the Examiner withdraws the rejection to claims 1 and 16 under 35 U.S.C. §103.

Claim 24 depends from claim 16 and recites additional features. It is respectfully submitted that claim 24 would not have been obvious within the meaning of 35 U.S.C. §103 at least for the reasons as set forth above. Therefore, it is respectfully requested that the Examiner withdraws the rejection to claim 24 under 35 U.S.C. §103.

Claims 12 and 13 were rejected under 35 U.S.C. § 103 as being unpatentable over *Lee* '439 in view of *Tanabe* ' 237 and were rejected under 35 U.S.C. § 103 as being unpatentable over *Hur et al.* in view of *Lee* '439 and *Tanabe*.

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. § 103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, it is respectfully requested that the Examiner withdraws the rejection to the claims and allows the claims to issue.

Nothing in *Hur et al.*, *Lee* or *Tanabe* show, teach or suggest a half-tone phase shift pattern or that the phase shift pattern is selectively formed on the transparent substrate as claimed in claim 13. Furthermore, none of the references show, teach or suggest that a surface of the phase shift pattern is flat. *Tanabe* merely discloses a half-tone phase shift mask but does not show, teach or suggest that the phase shift film is flat.

Since nothing in the references show, teach or suggest the invention as claimed in claim 13, it is respectfully requested that the Examiner withdraws the rejection to claim 13 under 35 U.S.C. § 103.

Claim 12 depends from claim 2 and recites additional features. It is respectfully submitted that claim 12 would not have been obvious within the meaning of 35 U.S.C. § 103 at least for the reasons as set forth above with respect to claim 2. Therefore, it is respectfully requested that the Examiner withdraws the rejection to claim 12 under 35 U.S.C. § 103.

Claims 3, 4, 6, 8 and 27 were rejected under 35 U.S.C. §103 over various references. It is respectfully submitted that since the primary references do not disclose the features as discussed above, the combination with the secondary references would not overcome the deficiencies of the primary references. Therefore, it is respectfully requested that the Examiner withdraws the rejection to claims 3, 4, 6, 8 and 27 under 35 U.S.C. §103.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested. Should the Examiner find that the application is not now in condition for allowance, it is respectfully requested that the Examiner enters this amendment for purposes of appeal.

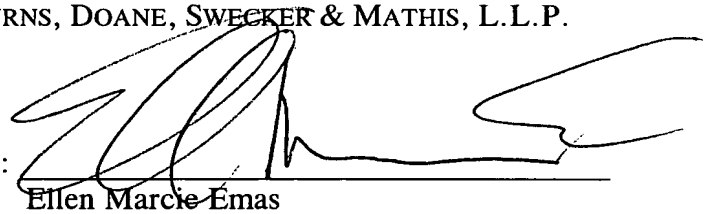
If for any reason the Examiner feels that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, Applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.



By:
Ellen Marcie Emas
Registration No. 32,131

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620

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